Public Health
Seattle & King County
HEALTHY PEOPLE. HEALTHY COMMUNITIES.
Alonzo L. Plough, Ph.D., MPH, *Director and Health Officer*

Basic questions about West Nile virus

What is West Nile virus?

West Nile virus is a mosquito-borne virus first identified in the West Nile region of Africa in 1937. The virus has caused outbreaks of disease in Africa, Asia, Eastern Europe and the Middle East since then but it did not appear in the United States until 1999. After first being discovered in birds and people in the metropolitan New York area, it has since spread westward across the US and into Canada and Mexico. As of the spring of 2004, West Nile virus had not been detected in King County, but it was found in several locations in Washington State in the fall of 2002.

West Nile virus can infect humans, birds, mosquitoes, horses and other animals. Birds become infected with West Nile virus and carry the virus in nature. Mosquitoes become infected after feeding on infected birds. People bitten by a mosquito carrying West Nile virus may have no symptoms at all or they may become ill with symptoms ranging from mild to severe. The less serious form is called West Nile fever, a flu-like illness that may last from a few days to several weeks. In the more severe forms, West Nile virus affects the nervous system causing swelling and inflammation of the brain or covering of the spinal cord (called neuroinvasive disease) and may result in paralysis and death.

What are the human health effects of West Nile virus infection?

Fortunately, most people who become infected with West Nile virus do not get sick--their body fights off the infection and protective antibodies develop. About 20% (1 person out of 5) develop West Nile fever with symptoms that may include fever, muscle aches, fatigue, headache, rash, and joint pain. Some people with West Nile fever are quite ill for up to several weeks and may see their doctor, but hospital care is not usually needed.

Less than 1 percent (about 1 in every 150) of persons who become infected with West Nile virus develop the more serious neuroinvasive form of the disease. Types of neuroinvasive disease include: West Nile encephalitis, West Nile meningitis, and West Nile meningoencephalitis.Encephalitis refers to inflammation of the brain. Meningitis is inflammation of the membrane covering the brain and spinal cord. Meningoencephalitis is a combination of the two syndromes. Symptoms may include fever, neck stiffness, confusion, disorientation, coma, tremors, convulsions, muscle weakness, and paralysis.

Persons who survive West Nile neuroinvasive disease may have long-term symptoms, but recovery from the milder forms of infection is usually complete. It is believed that once someone has had an infection caused by West Nile virus they develop long-term protection against being infected again.

How many human cases of West Nile virus occurred last year?

In 2003, there were almost 10,000 cases of West Nile virus illness reported in the US. Of these, 70% had West Nile fever and 30% had neuroinvasive disease. States with the highest number of cases included Colorado, Wyoming, North and South Dakota, and Nebraska. There were no cases of West Nile virus detected in Washington residents except for residents who had traveled to other states and acquired their infections there.

Office of the Director
999 Third Avenue, Suite 1200 · Seattle, WA 98104-4039
T 206-296-4600 **F** 206-296-0166 **TTY** Relay: 206-296-4931
www.metrokc.gov/health

City of Seattle
Gregory J. Nickels, *Mayor*
King County
Ron Sims, *Executive*

How many people have died of West Nile virus infection?

In 2003 in the US there were 262 deaths reported due to West Nile virus disease, slightly fewer than in 2002 when 284 deaths were recorded. Most of the deaths were among older people, with the median age of persons who died being 77 years in 2003 (median age means that half the persons who died were older than 77 and half were younger). However, death has occurred in all age groups from infants to the very elderly.

Are there persons who are at greater risk of developing more severe illness?

Yes. The risk for more serious illness starts to increase after about age 50. . In 2003, the median age of persons who developed the more serious neuroinvasive form of the disease was 54 years and the median age of those who died was 77 years (median age means that half the individuals were older and half were younger). Children are not at greater risk than young- or middle-age adults. Pregnancy is not known to increase the risk of developing the severe forms of West Nile virus infection, however there have been cases a small number of cases where a pregnant mother contracted West Nile virus and passed it to her unborn baby.

How is West Nile Virus transmitted?

West Nile virus is transmitted by the bite of a mosquito. Mosquitoes become infected when they feed on birds carrying the virus.. When the mosquito takes a blood meal from the infected bird, the virus becomes located in the salivary gland of the mosquito. Then when the mosquito bites a human or animal, the mosquito injects the virus into its victim. Persons who become ill develop symptoms 3 to 14 days after infection. The West Nile virus remains in infected individuals for a relatively short time and does not cause chronic infections.

West Nile virus is not transmitted directly from person-to-person except for rare cases attributed to blood transfusion or organ transplantation. It is also not transmitted from animal-to-person except in very rare instances related to occupational exposure. There is no evidence that persons can become infected from eating meat from a West Nile virus infected bird or other animal .

Can I get a West Nile virus infection from a blood or organ donation?

Although rare, West Nile virus has been transmitted through transfusions of whole blood or blood components such as plasma or platelets. Blood component suppliers are taking preventative measures to screen out blood donors who may have been infected with West Nile virus. A laboratory test for West Nile virus has been in use for screening blood donors since July 2003. There has been a documented instance of West Nile virus transmission by organ transplantation but the risk of this is extremely low.

Are pets and domestic animals at risk of West Nile virus?

Fortunately, clinical illness due to West Nile virus is rare in dogs and cats, and chickens are resistant as well. Persons with pet birds should be careful to protect them from mosquito bites. Horsesand other equines like mules and donkeys are susceptible to West Nile virus infection and severe illness and death can result. An equine West Nile virus vaccine is available and horse owners are strongly encouraged to consult with their veterinarian about immunization. Horses will also benefit from mosquito control efforts.

In King County, what is Public Health doing about West Nile virus?

Public Health surveillance activities are underway to monitor for the appearance of West Nile virus in birds, mosquitoes, animals, and humans. West Nile virus is usually detected in birds or horses before cases occur in humans. In addition, Public Health provides information on personal protective measures and environmental measures that can be taken to reduce the risk of mosquito-borne diseases. Care is taken to provide West Nile prevention education to non-English speaking groups within the county. Public Health also works with municipal governments and other agencies throughout King County to promote mosquito surveillance, reduction of mosquito habitat and other control measures.

Health care providers and hospitals are required by law to report to Public Health suspected cases of viral encephalitis including cases suspected to be caused by West Nile virus. For more information, consult the Public Health website at www.metrokc.gov/health/westnile

What is the connection between crows and West Nile virus?

Crows and other corvid birds are particularly susceptible to West Nile virus, and often sicken and die from it. Therefore, in partnership with the Washington State Department of Health, Public Health is testing some dead crows to see if they have died from West Nile virus. When Public Health finds a dead crow with West Nile virus, King County will know that the virus has arrived.

What do I do if I find a dead crow?

Call Public Health at 206-205-4394 if you find a dead crow in King County. Information about the crow will be entered into a tracking database and mapped. In addition, the crow you find may be selected for testing for West Nile virus. When you call, you will be asked a few questions. First, is the bird freshly dead (dead less than 24 hours)? Second, where and when did you find the dead bird? We will need to know the address where the bird was found. Third, is the bird undamaged? Only undamaged birds may be tested.

Not all crows need to be tested for Public Health to effectively monitor for West Nile virus. In fact, we receive many more calls reporting dead crows than the laboratory could test. If the crow you find is not appropriate for testing, or if you find a dead bird that is not a crow, you may dispose of it in your garbage can. Public Health is tracking crow deaths, so even if the bird you find will not be tested, we are still interested in the information you provide.

Birds discovered on Friday and Saturday will not be tested and should be disposed of in the garbage. Using gloves or a shovel, double bag the bird in plastic bags and dispose of it in your garbage. Though dead birds will not transmit West Nile virus, you should not pick up a dead animal with your bare hands.

What if the dead bird I find is not a crow?

To help us learn more about West Nile virus, Public Health is tracking the deaths of birds other than crows, though we will not be picking these birds up for testing. The types of birds, in addition to crows, that may be affected by West Nile virus and we are interested in receiving reports on are: ravens, jays, magpies, raptors (eagles, hawks, and owls), and smaller birds including sparrows, grackles, and finches. Call 206-205-4394 if you find one of these types of birds.

What is the life cycle of the mosquito?

Mosquitoes like still or standing water to lay their eggs. These eggs hatch into larvae and develop into adults in as few as seven days. Some species need only a few ounces of water to lay eggs.
What does a mosquito larva look like?

Larvae ("wigglers") are ¼ to ½ inch long, or smaller. They move by vigorously wiggling or flexing their bodies. They are usually dark in color and look like tiny aquatic worms.
When are mosquito larvae most likely to be present?

Though there are variations dependent on weather and temperature, mosquito larvae are most likely to be present in King County from March through October.

What can I do to reduce the number of mosquitoes?

Removing sources of standing water on your property and around your home reduces mosquito breeding habitat. Examples of things you can do include:

- Tip out barrels, buckets and wheelbarrows
- Tip out containers such as toys, cans or plant saucers
- Empty children's wading pools when not in use
- Change water in birdbaths and animal troughs at least once a week

- Get rid of used tires
- Clean garden ponds
- Recycle old bottles, buckets and cans
- Clean leaf-clogged gutters
- Empty water from flower pot dishes
- Dump water off of tarps and plastic sheeting
- Repair leaky outdoor faucets
- Cover rain barrels with mosquito screens
- Help your elderly or frail neighbors or relatives with these activities. Consider holding a neighborhood clean-up day to get rid of junk that holds standing water.

What can be done to avoid mosquito bites?

Be aware of the times of day when mosquitoes are most likely to be biting. The prime biting periods are often at dusk and dawn. If you do go outside when mosquitoes are biting, wear long sleeve shirts and long pants. Hats are also useful.
Consider wearing an insect repellent. Repellents containing the chemical N,N-diethyl-meta-toluamide (DEET) are known to be very effective. Some people are particularly sensitive to DEET and should use caution.
Children under the age of two should not use insect repellents containing DEET. Older children should use products with the correct percentage of DEET for their age. It is important to read the label and follow the instructions on the label carefully. For more information on DEET, visit the CDC's insect repellent use and safety page: www.cdc.gov/ncidod/dvbid/westnile/qa/insect_repellent.htm.
Ensure that window and door screens are in good repair and fit tightly.

What steps is King County taking to reduce the potential threat of mosquitoes?

Public Health is working with county agencies, cities, the state and sister agencies nation-wide to learn about the best methods to use to control mosquitoes. King County's approach uses the principles of integrated pest management and is balanced and is protective of both humans and the environment. Public Health is working to identify the mosquito species that live in our region by collecting data on mosquitoes from a variety of habitats. These data help with effective educational and control programs.

What are some of the substances that King County is using or considering to control mosquitoes?

One approach being used is the application of natural larvicides, in limited and targeted areas, to control immature mosquitoes before they emerge as adults. These larvicides are usually in the form of pellets or briquettes.
One larvicide used is based on a variety of Bacillus thuringiensis, which is a control technique well-known to organic gardeners.
King County will not do aerial spraying to kill adult mosquitoes unless there is a public health emergency, which is unlikely.

What can I do if I have a mosquito problem in my neighborhood?

Reduce breeding habitat on your own property, where possible (see above). If you notice that mosquitoes are a problem, please call Public Health (206-205-4394). Public Health does not have any regulatory authority to require property owners to remove mosquito habitat (except if the habitat is in violation of solid waste laws). However, we can send educational materials that provide guidance on reducing habitat. If the habitat is on public property, we will inform and advise the appropriate property owner. Finally, we are tracking specific locations that seem to be particular mosquito problem areas.

Aren't wetlands and retention ponds sources of mosquito habitat?

Wetlands and other natural water features may potentially be mosquito breeding habitat under certain conditions. Fortunately, wetlands also have many natural predators that feed on mosquito larva or adult mosquitoes and this often helps keep mosquito populations down. It is undesirable to drain or fill wetlands because they play an important role in cleaning and holding storm run off - they play a critical public

health role. Man-made retention and detention ponds play an important role as well. For information on King County properties such as retention/detention ponds and wetlands, visit http://dnr.metrokc.gov/dnradmin/press/2002/0916wnv.htm

Resources

For late breaking information, call Public Health's West Nile virus hotline: 206-205-3883.
To report a dead crow or mosquito problem, call Public Health's Environmental Health team at 206-205-4394 during normal business hours - Monday - Friday from 8:00 a.m. to 4:30 p.m.

- For information from the King County Department of Natural Resources and Parks on West Nile virus, wetlands and retention/detention ponds, visit: http://dnr.metrokc.gov/dnradmin/press/2002/0916wnv.htm

- For more information on West Nile virus in the state of Washington: www.doh.wa.gov/ehp/ts/Zoo/WNV/WNV.html

- For more extensive information about West Nile virus, consult the Centers for Disease Control and Prevention website at: www.cdc.gov/ncidod/dvbid/westnile/q&a.htm